

Oral History—

JOSEPH F. DALY



This is not an interview transcript. Owing to recording difficulties, a complete verbatim transcript is not available. What follows is an edited version of Dr. Joseph F. Daly's reflections on his Census Bureau career in response to questions by Mr. R. T. O'Reagan of the Bureau staff, on April 26, 1983. Minor interpolations were made for clarity and unintelligible statements were omitted, but all of Dr. Daly's principal commentaries are preserved with reasonable accuracy.

Dr. Daly was a former Associate Director [for Research and Development from November 1968 to October 1971] of the Census Bureau.

Daly: I was born in Washington D.C., on September 7, 1911. I received my undergraduate and masters degree at Catholic University and Ph.D. in mathematical statistics from Princeton University in 1939. After teaching mathematics at Catholic University from 1939 to 1942, I served in the Navy during World War II and was eventually assigned to the field of quality control in the Bureau of Ships.

In 1946, I joined the research and development staff at the Census Bureau under the direction of Morris Hansen [at the time of Mr. Hansen's retirement in November 1968, he was Associate Director of Research and development]. From 1963 to November 1968, I served as Chief Mathematical and Statistical Adviser.

After finishing at Princeton in 1939 and before the United States got into the war, I was teaching at Catholic University, and there was a fairly active group in the Washington Statistical Society—a chapter of the American Statistical Association. I used to have meetings at George Washington University, and this is where I ran into people like Ed Deming and Morris Hansen. In 1942, I joined the Navy and toward the end of the war was assigned to the Bureau of Ships and the quality control program. About 1946, I was sitting there waiting to be “mustered out”

when Morris Hansen and Ray Jessen (Statistical Laboratory, Iowa State College) came along and said that they needed somebody to go to Greece to help run a survey to monitor the Greek election. President Harry Truman was still working on the Marshall Plan at this time and the Communists were in the underground in Greece and seemed to have quite a following. In addition, there was a question whether the Marshall Plan would work—whether we [the United States] dared to try to assist the southern European countries to try to get them out of the Communist orbit. So there was a gang of us that went over there, Jessen and Arnold King from Iowa State, Deming, and Jerzy Neyman. We were suppose to conduct a survey to find out how many people there really were that were eligible to vote and what proportion of them voted; if possible, we would try to find out something about the people abstaining from the election. When it was all over, it became pretty clear that the Communists would not carry more than about 15 percent of the vote, and President Truman went ahead with the Marshall Plan in Greece, and it worked out all right. It was a very interesting job, very interesting group of seven or eight of us working over there. We stayed in Greece for about 3 months and that's what really got me interested in survey sampling. I probably would have gone back into teaching at that time, except for my contact with the people from the Census Bureau, so that's how I came into the Bureau in May of 1946 right after I got out of the Navy. So I joined the Census Bureau and began my career working with Hansen and Bill Hurwitz [William N. Hurwitz, Chief, Statistical Research Section in the Office of the Assistant Director for Statistical Standards] and, of course, my primary job because of my experience at the Bureau of Ships was with statistical quality control.

One of the problems at that time was that the Census Bureau was still in the punch card era. The 1940 Census of Population and Housing was over, but people still remembered the problems associated with that undertaking—of getting keypunchers to do their work with some degree of accuracy. The Bureau was still in the days of 100-percent verification. So one of the things we thought we could do with statistical sampling was to design quality control in terms of a sample of the activities to verify the accuracy and quality. One of the things we applied this to was foreign trade keypunching. There was a great big punching job for foreign trade every month, about 1 million documents came through each month. Foreign trade punchers were a strange crew who stayed on for years and years and years. They seemed pretty good. Of course, 100-percent verification in foreign trade was an expensive business, so we were interested in applying this

new approach to reduce costs and improve quality. It was a very interesting time with lots of things to do to make improvements in statistical work, and there was Morris Hansen, particularly, and Howard C. Grieves [Assistant Director for Economic Fields] and Ross Eckler [A. Ross Eckler, Deputy Director, from 1949 to 1965; Director, from 1965 to 1969]. It was quite a place to work. Almost anything that you could argue might be good. You were given a chance to try it out.

So this was the environment we had, and the one we needed to get into the UNIVAC development. The Bureau was still using punch cards. There were millions of little piles of cards, and you had to add to or subtract from the right piles to adjust to control totals—this would drive everyone crazy. So we needed to speed up the computing process, and this led us into the contract with Eckert and Mauchly [Presper Eckert, Jr. and John W. Mauchly of the Eckert-Mauchly Computer Corporation] which gave us the UNIVAC. This started, I believe, about 1948. I got involved in this because I had known John Curtiss in the Bureau of Ships, and he had gone over to the Bureau of Standards. So we used their people and developed this thing together. We got the money in the budget for this UNIVAC development through Congressman John J. Rooney (D., N.Y.). He was the Chairman of the House of Representatives Appropriations Subcommittee—a very powerful representative. After a while, he would get angry that this dragged on a lot longer than anybody thought it should and got to be more expensive, but he still supported the development. Then, this also led into the development of the optical scanning device, also with the Bureau of Standards, which became known as FOSDIC (Film Optical Scanning Devices for Input to Computers). The IBM (International Business Machines) was working on mark sensing at the same time, but at this stage that didn't look like the way to go. So FOSDIC came along and the Census Bureau pushed it pretty hard, trying it out on housing surveys, special censuses, and some parts of the population survey—that took a lot of fighting. We were thinking about the 1960 Census of Population and Housing with these developments, so we experimented. We designed questionnaires; we even had to design cameras that could film the stuff fast enough to get it done in time. We kind of muddled through the 1960 census. We had to reassure Conrad Taeuber Assistant Director [for Demographic Fields after April 1951].

We wouldn't believe McPherson [who had worked for the Census Bureau since 1938, machine development officer in 1945, and later principal contracting officer on UNIVAC development] when he said it was going to work.

It was also around the time of the 1960 census that we began to learn about measuring response errors. The Census Bureau's ability to do this came partly from having much higher speeds of computing power. I should mention here, also Harold Nisselson [Mathematical Statistician for Special Research Studies, to March 1963; Assistant Director for Statistical Standards and Methodology, to October 1977; Associate Director for Statistical Standards and Methodology, from October 1977 to February 1979] in connection with the census of agriculture.

The way we had the statistical research group set up was that we had the central group, and then the people like Nisselson in agriculture, Ralph Woodruff [Assistant Division Chief, Business Division at the time of the 1963 Economic Census], and Joe Steinberg [Joseph Steinberg, Chief, Statistical Sampling Section, Population Division, during the 1950 Census of Population and Housing]. We had the statisticians in most of the Bureau's divisions—sort of reached out into all the operating areas with people, who also came to out seminars. They were technically responsible to Morris Hansen, but administratively they were part of other divisions. Hal Nisselson was quite effective in developing a sample study of the accuracy of the agriculture census, and with that background we were able to get the same kind of an operation going in the population census. We would survey a certain enumeration district, and go back there with a more detailed kind of questionnaire. So this was the beginning of the post-enumeration survey, one of the most interesting operations we had.

In the 1950s, it stopped being so much fun. After President Truman left office, President Eisenhower came in, and he brought in some businessmen to clean up the mess in Washington—to straighten things out and “fly right.” There was a fellow by the name of Dodge [Joseph M. Dodge, Director, Bureau of the Budget (this agency was later renamed the Office of Management and Budget)]. He made it pretty clear that the Federal Government did not need all these silly Census Bureau statistics. The Government could get all the information from the World Almanac, and places like that. The administration did not support the census of business, saying that all the information was available from business anyway. Well, they found out they were wrong. Meanwhile, however, the attitude was that there was a mess that needed to be cleaned up, and we lost a lot of good people around Washington. The administration nearly fired the Director for the Bureau of Standards for releasing a report critical of some inventor's storage bat-

tery additive. It took a resolution from the National Academy of Sciences to stop that.

Then Senator Joseph McCarthy [R. Wisconsin] came along, and he made trouble for the statistical fraternity because a lot of the people that were in statistics had gone to places like City College of New York and some of the universities in the South, and they were really suspect. So we lost, I guess, about half a dozen good people in the McCarthy period—not all from the Census Bureau. There were people working in the Pentagon working for the Air Force with one of the UNIVAC computers; some of them disappeared too.

When John F. Kennedy became President in January 1961, things began to brighten up again. It was a real exciting time with people like Scammon [Richard M. Scammon, Director, from May 1961 to January 1965] and a feeling again that statisticians could contribute something to what was going on in country. Even after President Kennedy was killed in November 1963 and Johnson became President, this was the first time the Census Bureau did not lose a director. Every time before that, the director would change with the Administration, but President Johnson let the Bureau go along pretty much the way it had been going. We were getting along pretty well there in the Kennedy and Johnson era. Then I guess getting close to 1970 things began falling apart again.

The Vietnam War bogged down, and public attitudes toward the Federal Government changed quite a bit. There was a lot of resistance to Government activities. You could tell this before the 1970 Census of Population and Housing. Some politicians thought they could get mileage out of objecting to the census, so we had all kinds of meetings with congressional subcommittees about invasion of privacy and that sort of thing. The census questions got changed several times, and even while we had questionnaires being printed, we had to keep changing questions. It was quite a hectic time. It's was a period of time when I wasn't terribly happy. This was about the time when Morris Hansen left; well, quite a few people left just before the 1970 census—Hansen, Grieves [Howard C. Grieves, Deputy Director, from December 1965 to June 1967], Max Conklin [Maxwell R. Conklin, Associate Director for Economic Fields, from January 1966 to September 1968]—they all left in the late 1960s.

This was also the time when we started working very hard on the business surveys, especially the Survey of Current Business. There was some concern about whether this should be taken over by a private group, instead of being done by the

Census Bureau. We wanted to improve the quality and efficiency of the business survey, and we were at the point where the Bureau could consider using Social Security employer identification files as the sampling frame for the business survey without supplementing it with an area sample. We did not want to get back into “cutoff” surveys where you took the big establishments that you knew about and then sort of imputed the data for the rest.

We knew that the Social Security Administration developed and maintained a pretty good file for use in the census, but it was quite a tricky operation to keep this file current in order to add new businesses and delete firms that went out of business monthly. It was not a simple operation at all. There was a big battle that went on, I guess, for 2 or 3 years over just when the Census Bureau would be at the point where it could “entrust” the entire business survey to Social Security Administration’s files. I think this was partly the reason for the tension that developed at that point and led Morris Hansen and Howard Grieves to decide they’d had enough. We finally came through on that one all right, and I guess we settled most of the controversy. A lot of work had to be done. Then, meanwhile, we were getting ready for the 1970 Census of Population and Housing, and that’s about the time when I took over for Morris as Associate Director for Research and Methodology in late 1968. This was also about the time when the Bureau felt a great deal of pressure to improve small-area statistics, a very tricky area of work. People just don’t realize that the United States was not mapped very well for one thing, and the agency had the feeling that if it could get somebody interested in mapping, as they had done in Greece, the Census Bureau would have better maps. In fact, the British Royal Air Force had better maps of Crete during the World War II than we had for the State of Ohio. So, we got interested in the mapping business, and we had a feeling that if we could somehow organize a set of maps and keep at it long enough we would get the pieces fitted together properly and not have errors in geography—1970 was when we first got into this field. There was a great amount of pressure for small-area data. This was one of the main things that worried me all through the 1970 census—How were we going to be able to satisfy this pressure? Many of us in the statistical research area were not happy about this development. We had to provide things we did not know how to provide. I think we did better in the 1980 census, but I’m not sure. I think the Supreme Court one-man-one-vote rule was part of this pressure where all the congressional districts had to be precisely the same size and have just the right composition. In addition, the cities were getting money from the Government to fix up the central cities. It wasn’t called revenue sharing until President Richard Nixon had been in

office for quite a while. However, the background was there and all kinds of problems involved the allocation of funds. So everyone wanted more accurate statistics for small places and areas within cities.

On the computer side, congressional support was good. Representative John Rooney knew what he was doing. He used to give us a hard time, but he would take care of it if we gave him the facts. I think we were pretty happy with that side of it. Other representatives thought they could get mileage out of attacking the Bureau on invasion of privacy, etc. I didn't get too involved with that.

The statistical policy group at OMB (the Office of Management and Budget) started out as a very strong group. I think during the Eisenhower years they went downhill. There wasn't really anybody left there but Ray Bowman [Raymond T. Bowman, Assistant Director for Statistical Standards, Bureau of the Budget], and that agency didn't have as much power. Most of its energy was spent on fighting battles over turf and who should be running which parts of the Federal statistics programs. Then it degenerated into a big battle about metropolitan statistical areas. This was kind of a silly thing for the Bureau of the Budget to get involved in, because the whole notion of metropolitan areas came out of the Census Bureau as it tried to provide data for people about what was really going on in their respective areas and not just within the city limits. So the Census Bureau started to set up metropolitan statistical areas. Well, next thing you know these things got involved in radio station coverage and advertising and everything else, and everybody wanted to be part of a statistical area. Therefore, the pressure would hit the Bureau of the Budget to make every little town its own SMSA (Standard Metropolitan Statistical Area) so the radio station could get more advertising. Well, these were the kind of battles the Bureau of the Budget kept getting involved in. It made it very difficult for it to take a statistical approach to the kinds of problems like how should you allocate money, how should you cut down duplication and overlapping, and how should you approach the question of how to deal with two different employment surveys—the Bureau of Labor Statistics produced the employment data and the Census Bureau collected unemployment data in its household survey. Nobody could really face the question—Is it good to have two different competing systems? Do you get more “truth” out of running two experiments, or do you try to make everything agree so nobody can argue about which number is right?

Another major development about this same time was the international effects of what the Census Bureau was doing. Since it got into using high-speed computers early as well as applied sampling, Census got requests to travel to various countries and tell them what we were doing. We had quite an active international statistical program. Cal Dedrick's [Calvert L. Dedrick, Chief, International Statistics Programs Office at the time of the 1960 census] staff did all the hard work, but there were many others of us who did quite a bit of traveling too. I think I did more traveling while I was with the Census Bureau than I did in the Navy—everywhere from Geneva to Buenos Aires and from Oslo to Tel Aviv—talking about how the Census Bureau was using computers, what we thought could be done in this kind of work, how it would help them to improve their statistical systems, and what we were doing about quality control. So I got involved in that a good bit.

With respect to the Census Bureau's relations with the Department of Commerce, I didn't really get into that much. I think for the most part the Secretary of Commerce did not much care what the Census Bureau was doing. I cannot think of a single Secretary of Commerce who really had an interest in the Bureau. It operated pretty much independently, and, except for appropriations, I guess Census was fortunate in that the department let us go along on our own. Sometimes, in fact, the Census Bureau got a pretty fair shake out of the department.

As far as the Bureau's image, I don't know much about that in terms of housing, foreign trade, or manufacturing data. However, with regard to area sampling and computer work, the agency felt like it was in the forefront of things during the 1950s and 1960s; the Bureau did not have much competition. Therefore, we were looked upon as the leader. A lot of the people have caught up to us in the meantime, but we were pretty much ahead of things through the 1950s and 1960s.

Now you asked whether these developments were because of the circumstances being right, or the nature of the individuals who overcame the odds, so to speak. I think it was mainly the circumstances were right for things to happen, although it took a great deal of pushing on the part of Hansen, Grieves, and others to break down resistance to overcome the old ways of looking at things. The notion that you could draw inferences with a measurable degree of confidence using sampling methods was something that took time to get across. However, the agency would have broken through resistance no matter who would have been involved. I think Hansen, Bill Cochran [W.G. Cochran, Professor at Harvard University] and the American Statistical Association's backing, with the help of others, was

very important. In the computer business, however, things were really due to happen anyway, and they happened all over the world. As far as the politics of it all, I don't think there was much. It was a scientific set of developments. I would say the House of Representatives' Appropriations Committee deserves quite a bit of credit for keeping politics out of the Bureau's work. It supported Census without knowing every detail. The representatives simply thought we were doing a good job. The main area where I think we had pressure to do things we did not know how to do was in small-area statistics business and in the allocation of the funds to local areas. I think that was a mistake to get involved, but it was clearly something that nobody knew how to do, and it led to a lot of conflict, struggle, and complaints that should not have happened. If we had had time to work on the question of how to make use of the Internal Revenue Service's statistics to allocate income by areas without compromising confidentiality, it would have been a lot better. The Census Bureau's staff were the only individuals who could get involved in the job; so they got hit with the pressure and complaints. Other than that particular pressure, it was a period of very important scientific developments. We all felt very good about it.